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Economic Competitiveness

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SCIENCE & TECHNOLOGY POLICY

Swedish Industry Calls for More Research Funding

93WS0129A Stockholm SVENSKA DAGBLADET in Swedish 17 Nov 92 p 9

[Article by Thomas Haegerstrom: "Industry Group Disturbed by Decline in Research Funding"]

[Text] Sweden does not spend enough on research and development. More money must be invested in this area in order to get industry out of the current crisis.

Some 2.5 percent of our gross national product (GNP) currently goes into research and development. This should be increased by at least 1 percent to 3.5 percent. The increase should be aimed at improving the financial results of research.

These statements were made by Lennart Ohlsson, a fellow of the Federation of Swedish Industries, who presented a report Monday on industrial research and development needs.

Lack of Contact Among Researchers

In Sweden this area can be divided into three parts: basic research, applied research, and development work.

Both technical colleges and businesses carry out research. In 1989 industry accounted for 64 percent of all research and development in this country, while the technical colleges were responsible for 32 percent.

Basic research is carried out primarily at the technical colleges, while industry concentrates on development work, which leads to a lack of contact between the different types of research. If Swedish companies are to succeed in renewing themselves to the extent that is necessary to overcome the current industrial crisis they must bridge this gap, Ohlsson said.

But according to the report the situation is aggravated by the fact that total investment in research and development is declining. In 1987 this kind of investment represented almost 3 percent of GNP, around 35 billion kronor. In 1991 it had declined to 2.5 percent. According to Ohlsson the effect will be devastating if the trend continues.

"Sweden must endeavor to increase the ratio by at least 1 percent in the 1990s," he maintained.

Ohlsson said that almost the entire increase should go toward improving contacts between the technical colleges and the business sector. He gave some examples of possible recipients of the money: small and medium-sized companies, big companies and interdisciplinary scientific research institutes.

'Nobel University'

Other more concrete proposals include a new international "Nobel University" at Novum Research Park near Huddinge Hospital. The research complex, which emphasizes product and company renewal, is a cooperative effort involving Stockholm University, the Karolinska Institute, the School of Economics, and the Institute of Technology.

European Community R&D Status, Plans Reviewed

Budget Analysis

93WS0132A Paris INDUSTRIES ET TECHNIQUES in French Oct 92 pp 12-14

[Article by Philippe Grange: "10 Billion ECUs [European Currency Units] Over 4 Years for R&D"—first paragraph is INDUSTRIES ET TECHNIQUES introduction]

[Text] The budget of the European research master plan provides for 15 specific programs.

Highlights

- A large part of the budget is spent on projects for training, education, and dissemination, etc.;
- the next R&D master plan could represent 6 percent of the community budget, compared with 3 percent today;
- in 1992, the community research budget was ECU2.4 billion.

The second scientific and technical power in the world, the 12 [European Community countries] account for 30 percent of all OECD R&D expenditures. That is appreciably more than Japan (20 percent), but less than the United States (49 percent). They employ about 630,000 researchers (compared with 480,000 in Japan and 960,000 in the United States).

Community research started in the fifties, with the Euratom treaty and the creation of the Ispra, Italy, Common Research Center (CCR). Later on, the CERN [Nuclear Studies and Research Center] gave Europeans the most efficient nuclear physics tool in the world and also made them aware of the power to be derived from cooperation. Other joint projects were then launched during the seventies: the European Space Agency [ESA], aircraft manufacturing programs, the ESPRIT program [European Strategic Programs for Research and Development in Information Technology], etc. The trend increased during the eighties with the EUREKA initiative [European Research Coordinating Agency] and the proliferation of non-community multinational programs. In 1987, the European Single Act institutionalized community research (which was not covered by the Treaty of Rome), stressing ambitions and the necessary convergence of ideas and resources.

The Union Treaty (Maastricht) makes these objectives still more ambitious. It is meant to bring all EEC research in all fields under a single master plan. In other words, European research would no longer serve merely to give companies a competitive edge; it would serve all community policies (public health, social policy, culture, education, environment, transportation, agriculture, etc.) that contribute to the "quality of life." In addition, the treaty provides a basis for the "European industrial policy," thus in fact recognizing the Community's technological development efforts. The research covered by the four- or five-year "master plan" (PCRD [R&D Master Plan]) will be implemented as "specific programs." The third PCRD, governing current programs for the period 1990-1994, is subdivided into three main classes and six subclasses (disseminating technologies: information and communication technologies, industrial, and materials technologies; natural resources management: environment, life sciences, and technologies, energy; development of intellectual resources: human capital and mobility). This is complemented by Value, a program cutting across all classes and designed to disseminate and implement knowledge (Value is financed through a 1 percent levy on the budget of all specific programs).

The third PCRD total budget amounts to ECU5.7 billion (1 ECU = 7 French francs [Fr]). To this should be added another ECU3.1 billion resulting from an overlap with the second PCRD (1987-1991). That is not all; as the Commission expected procedural delays and political difficulties in adopting and implementing the fourth PCRD (which might represent 6 percent of the Community budget, compared with 3 percent today), early last summer it suggested that the Council should allocate an additional ECU1.6 billion to finance projects in 1993 and 1994! If this extra money is approved (a decision is expected before the end of 1992), the third master plan will then have received over ECU10 billion over five years (compared with 5.4 billion for the second PCRD).

Part of the annual community research budget—ECU2.4 billion this year—is spent on efforts to optimize the master plan: education and training programs (Comett, Tempus, etc.), programs to disseminate and implement research results (Thermie, Spring, Nett, etc.), and pilot and demonstration projects in the fields of environment, steel and coal (steel technical research, social research, ECSC [European Coal and Steel Community]).

[Diagram, p 12]

Additional ECU1.6 Billion for European Programs in 1993-1994

The ECU1.6-billion additional appropriation that is expected to be granted late in 1992 will be allocated to the third PCRD various research lines as follows (in billion ECUs):

Information and communication technologies 0.625

Industrial and materials technologies.....0.281

Environment.....0.136

Life sciences and technologies.....0.148

Energy.....0.410

Human capital and mobility.....0

[Box, p 12]

Open Door for EFTA [European Free Trade Association] and Central and Eastern European Countries

Under certain conditions, community programs are accessible to non-member countries—in particular EFTA countries (Austria, Finland, Iceland, Liechtenstein, Norway, Sweden, and Switzerland) under the new European Economic Area [EEA] agreement that will come into force on 1 January 1993. Some other central and eastern European countries (Bulgaria, Hungary, Poland, Roumania, Czechoslovakia) will enjoy restricted participation designed mostly to promote researcher exchanges.

In the same order of ideas—expansion—two major cooperation programs were just added to the European arsenal: COST [European Scientific and Technical Research Cooperation] which dates back to 1971, and EUREKA which was created in 1985 as the result of a French initiative (see article page 20 [not reproduced]).

Major European Programs

Program	Objectives	Beginning	Ending	Total Budget[1] (M-ECU)	Additional Appropriation (M-ECU)	Remaining Budget (M-ECU)	Number of Projects[3]	Fields Covered
Agriculture and agribusiness	To improve product quality and diversity as well as the competitiveness of agricultural and agribusiness operators.	9 September 1991	31 December 1994	330	93[2]	About 200	103 (8)	Primary production; input for agriculture, horticulture, silviculture, fisheries, and aquaculture; end use and finished products.

Major European Programs (Continued)

Program	Objectives	Beginning	Ending	Total Budget[1] (M-ECU)	Additional Appropriation (M-ECU)	Remaining Budget (M-ECU)	Number of Projects[3]	Fields Covered
Biotechnologies	To improve basic knowledge and develop industrial application technologies for agriculture, industry, medicine, foodstuffs, and the environment.	1 June 1992	31 December 1994	164	55[2]	55	90	Molecular approaches; cell and organism biology; population ecology and biology.
Human capital and mobility	To increase quantitatively and qualitatively the human resources available for research and technological development.	16 March 1992	31 December 1994	488	0[2]	380	570	Development of a community grant system; support for the creation of scientific cooperation networks; development of access to major facilities; conferences.
Comett II	To develop cross-border training, stimulate and reinforce cooperation between companies and higher education institutions.	1 January 1990	31 December 1994	230	-	100	1,824 (18)	Networks of associations between universities and companies; student and scientist exchanges; training projects; additional measures.
COST	Scientific and technical cooperation projects can be undertaken in all fields, as long as enough countries are interested.	1971	-	NC	-	Annual budget per member state	30 French projects in 1990	Planning is done jointly, but financing is per country. COST projects are "a la carte" and are not linked to programs.
Knowledge dissemination and implementation (Value II)	Program cutting across classes, designed to implement the knowledge acquired under the third master plan (1990-1994).	1 May 1992	31 December 1994	57	-	32	33	"Research-industry" interface; "research-society" interface.
Nonnuclear energies (Joule II)	To develop new economically viable and environmentally sound energy options, including energy-saving technologies.	9 September 1991	31 December 1994	155	180[2]	About 4	250 (4)	Analysis of strategies and modeling; production of fossil-fuel energy with a minimum of waste; renewable energy sources; energy utilization and management.
Environment	To understand the basic mechanisms of the environment, and to help identify the impact of human activities on the environment.	7 June 1991	31 December 1994	261.4	136[2]	113	Selection in progress	Technologies and engineering geared to the environment; social and economic aspects of environmental problems; technological and natural risks.
EUREKA	To improve European competitive edge through the cooperation of industries and research organizations in the 20 member countries. To develop products with worldwide commercial potential.	1 July 1985	NC	9,600 from 1985 to 1992	-	Annual renewal; in France: MFr900 in 1992	623	Biotechnology, computer-integrated manufacturing; transportation, environment, data processing, energy, materials, communications. Strategic projects: transportation (Prometheus), television (HDTV [High Definition Television]), electronics (JESSI [Joint European Submicron Silicon Initiative]).

Major European Programs (Continued)

Program	Objectives	Beginning	Ending	Total Budget[1] (M-ECU)	Additional Appropriation (M-ECU)	Remaining Budget (M-ECU)	Number of Projects[3]	Fields Covered
Controlled Thermonuclear Fusion	To develop prototype reactors, to secure the technological expertise required to build future fusion reactors.	19 December 1991	31 December 1994	458	170[2]	NA	Programs without competitive bidding	Study of the "Next Step"; longer-term technical developments; JET [Joint European Torus] (plasma safety).
Measuring and testing	Harmonization of measuring, analysis, and testing methods. Development of new methods and generic tools yielding accurate measurements.	1 June 1992	31 December 1994	47.5	0[2]	45 allocation in progress	Selection in progress	Sectorial testing problems (support for standardization); joint calibrating resources; development of new measuring methods.
ECSC Social Research	Regroups four research programs all of which are related to the coal mining and metallurgical industries.	1985-1990	1992-1994	400 until 1994	-	Budget renewed every year	NC	Ergonomics program (safety during the development of new technologies); safety; health protection; nuisance control.
Coal-related technical research	Support for technical research work involving two essential coal-related sectors.	1 January 1990	31 December 1994	140 from 1990 to 1992	-	Budget renewed every year	400	Mining technology (drilling systems and pit building, ventilation, infrastructure); product valorization.
Steel-related technical research	Quality improvement and production cost reduction. Adaptation of production conditions to ever more severe environmental requirements.	1 January 1991	31 December 1995	160 from 1990 to 1992	-	Budget renewed every year	450	Processing time reduction; technical reliability of facilities; raw material and energy savings; product optimization, byproduct valorization.
Marine sciences and technologies (MAST II)	To promote the application of knowledge required to explore, develop, and protect European coastal seas.	7 June 1991	31 December 1994	104	0[2]	A few million ECUs	68	Marine sciences; coastal sea science and engineering; marine technology; large integrated projects (North Atlantic, Mediterranean).
SPRINT [Scientific Program for Innovation and Technology Transfer]	To promote the dissemination of new technologies and innovation.	1 January 1989	31 December 1993	90	-	45	NC	Public and private consulting institutions trying to set up cross-border technological cooperation agreements at the request of small and mid-size companies. Support for scientific parks.
Nuclear fission safety	To take into account all factors promoting the safe use of nuclear energy.	28 November 1991	31 December 1994	35.6	60[2]	7	100 coordinated projects	Radioprotection, reactor safety.
Computerized information systems of general interest	To ensure the interoperability of computerized information systems, peripherals, and networks across Europe.	7 June 1991	31 December 1994	376	118[2]	A few million ECUs	120 (Aim, Drive, Delta)	Creation of European networks between administrations; transportation systems; health care; remote training; computerized information systems in rural areas.
Information technologies (ESPRIT III)	To strengthen the Community's technological base and accelerate the dissemination of information technologies.	8 July 1991	31 December 1994	1,338	430[2]	400	318	Micro-electronics; data processing systems and software; office and house automation systems; computer-integrated manufacturing (CIM); basic research.

Major European Programs (Continued)

Program	Objectives	Beginning	Ending	Total Budget[1] (M-ECU)	Additional Appropriation (M-ECU)	Remaining Budget (M-ECU)	Number of Projects[3]	Fields Covered
Communication technologies (RACE II [Research and Development in Advanced Technologies for Europe])	To develop intelligent, safe, and reliable networks, to make it possible to add new services to the integrated network.	7 June 1991	31 December 1994	484	77[2]A few million ECUs	About 100	Research on wideband integrated communications; network intelligence; mobile communications; data security technologies; image and data communications.	
Industrial and materials technologies (BRITE [Basic Research in Industrial Technologies for Europe] Euram II)	To strengthen the scientific and technological bases of manufacturing companies, in particular small and mid-size industries, by integrating R&D into all factors pertaining to material and product life cycles.	9 September 1991	31 December 1994	663	281[2]	About 160	240 + 58 companies awarded Craft bonuses	Raw materials and recycling; new and improved materials; product and process design and manufacturing; aeronautic technology research.
Tempus	Higher education mobility between the Community and Central and Eastern European countries.	1 July 1990	30 June 1995	About 200 from 1990 to 1992	-	98.3 for 1993	637	Support for projects associating universities and/or companies in various countries.
Thermie	To promote projects aiming to develop, implement and/or disseminate new energy technologies.	1 January 1990	31 December 1994	700	-	350	350 (2.5)	Rational use of energy in factories and buildings; renewable energies; solid fuels; oil and gas.

M-ECU: million ECUs; 1 ECU = Fr7; MFr: million French francs

1. Exclusive of Common Research Center budget

2. Assumed additional appropriation for 1993-1994

3. In parentheses, average number of partners per project

NC: not communicated; NA: not available

Also included among the third PCRD specific programs: "Biomedical Research and Health" and "Life Sciences and Technologies for Developing Countries."

Programs for Small, Medium Firms

93WS0132B Paris INDUSTRIES ET TECHNIQUES in French Oct 92 pp 8-10

[Article by Laurence Girard: "Still Too Few PMEs [Small and Medium-Size Companies] in Community Programs; PMEs That Benefit From European Programs"—first paragraph is INDUSTRIES ET TECHNIQUES introduction]

[Text] If your project is well defined, if you know how to take advantage of specific aid payments, and if you expect short-term results, participation in a European program can prove quite profitable. Some companies have already demonstrated it.

Highlights

- Under BRITE EURAM, the ECU30,000 feasibility bonus is easy to obtain; there is even no need for a partner;
- the Value program enables you to take advantage of the results of already completed research projects;
- the ANVAR [National Agency for the Implementation of Research] will pay for a consultant to help a PME prepare a EUREKA application.

"What are your two-year objectives? When we put this question to PME chief executive officers [CEOs], they smile and immediately answer that it is 'to survive,' as their horizon seldom extends beyond one year." Based on his experience, Michel Duhamel of the Nodal Consultant company is not surprised to see so few PME participate in European research programs. Complex and time-consuming procedures, duration of the programs, precompetitive nature of the projects, very high selectivity: for many CEOs, whose priority is short-term results, the Brussels adventure seems out of reach. Others blindly plunge into it, as if hypnotized by the El Dorado of community subsidies. They may get bogged down in it. Consultants agree that this is the major danger. If the only motive for joining a European research project is to get a bonus, the hunt for trophies may soon exhaust the company's stock of (financial) ammunition! Michel Verel, CEO of Vecsys (25 people, sales of 10 million French francs [Fr]), a company known for its expertise in voice processing, estimates that Vecsys gets European financing ranging from Fr1 million to Fr2.5 million per year. But, he indicated, "for certain contracts we get Fr100,000 and spend Fr150,000 just in travel expenses." It is true that the ESPRIT program in which Vecsys participates includes no fewer than 15 members from all European countries. What is the right approach! Basically, for a PME, it consists in defining a project—developing a new product, improving a manufacturing process, opening itself to new markets—and in choosing the most suitable of a whole range of available tools. This range of tools keeps increasing.

Initially, European programs were not designed for PMEs. Very ambitious, the RACE, ESPRIT, and to a lesser extent the BRITE-EURAM projects brought together researchers from prestigious research centers or large corporations. The only PMEs invited to the round-tables had to show their credentials in the form of outstanding technological expertise. Most still carried remnants of the umbilical cord that used to connect them to the research centers whose issue they were. Chorus, Verilog, Simulog, Archipel, Telmat are just a few of these brains-rich companies which quite naturally found their way to these programs, sometimes even as project leaders. Research contracting companies did not have to be asked twice to participate either. They include Bertin, as well as the Lyon company Metravib, which received over Fr8 million in European subsidies over five years, from 1986 to 1991.

But what about the rest? The European Commission became "concerned" when it found that only a marginal number of PMEs obtained access to the projects although small companies make up most of the industrial force. A General Directorate, DG XIII, was then asked to make European programs more accessible to PMEs. An entire series of steps were designed specifically for that purpose.

The first and the easiest to access is called "feasibility" bonus. Le Conoscope, a company created in 1988 by Gabriel Sirat, professor at the National Higher School for Telecommunications, benefitted from it. This company uses a conoscopic holography technology which, among other applications, will measure distances very accurately. Gabriel Sirat mentioned the advantages of this European procedure: "You can get the feasibility bonus on your own; there is no need for a partner. It enabled us to make a feasibility model and prepare an application to gain access to a full-fledged European program." The bonus, however, is relatively modest: at best ECU30,000 (Fr210,000). It will cover 75 percent of the expenses incurred for a project over a [three-]month period. This feasibility bonus does not in any way imply that the company that receives it will benefit from any advantage when answering a European invitation to bid. But it enables CEOs to see how the land lies in Brussels, to make contacts, even to start looking for partners for subsequent operations. This bonus represents one facet of the BRITE-EURAM (DG XII) program, the most accessible to PMEs. Actually BRITE-EURAM shares much of the industry's concerns. It deals with materials and raw materials, their design, manufacturing, and applications in the aircraft industry. Still under BRITE-EURAM, a procedure specially designed for PMEs—Craft—was initiated last year simultaneously with the launching of the second program stage. The idea—for one or several PMEs without R&D capabilities and a technical center to work together on a joint project—was borrowed from Germany. The ideal configuration is a partnership of four European PMEs from the same activity sector. The first selection stage was completed in July. Of the 42 French PMEs that had applied, 25 made it without problem. Among the subjects proposed, that of the Lyon company Chambe (43 people, Fr120 million) involves quality assurance. Like its partners, the French companies Thibon and Thoreau and the Italian company Sildamin, Chambe manufactures cattle feed. Eric Chambe, the Craft

project coordinator, was among the first to file his application: "We learned about this European procedure through our subsidy consultant, the Qantor company, even before the procedure was introduced. We contacted companies that work in the same sector but do not directly compete with us. We must all solve the quality assurance problem, a field where mostly large groups excel." Then, why not take advantage of subsidies to obtain ISO certifications, with the APAVE acting as associated technical center? The first selection stage proved them right. This qualification now entitles them to a subsidy covering 75 percent of the expenses incurred in preparing a more complete application, including travel expenses. If the project if definitively accepted after the second selection, half of its cost—ECU930,000 (Fr5.8 million)—will be financed by the Brussels gold mine.

The other projects in competition during the second stage are a mixed bag; they include a project of the FOS company (Saint-Etienne Tool Factory) having to do with the surface treatment of cutting tools; a study of the Madelaine company of Estaire (Nord) for a process to dry wool without it getting yellow; and a surface treatment capable of reducing the allergenic effects of nickel use, to be developed by Coeurdor (Manche). These projects would last from 18 to 24 months.

Some, however, criticize the Craft procedures. First, these procedures require a regrouping of companies that are more or less competing with one another. This strongly influences the choice of subjects. Designing a new product or a new process is entirely out of the question. It is too strategic to be shared with others. That is because participating companies are not the only ones to know about the results of the project. The technical center in charge of the project can obviously make its knowhow available to other companies. Critics also point out that these procedures could be diverted to benefit contracting research companies, which would thus have their research financed at the expense of PMEs...

However, the Craft and the feasibility bonus procedures have one advantage in common, one that PMEs appreciate very much: they operate continuously. This means that applications can be filed at any time and processed fairly quickly—three to six months. The feverish wait after bidding, the cold sweat when bidding or awarding deadlines are postponed, which are the common lot of community programs, are simply not appropriate here.

EUREKA projects benefit from the same flexibility. Bear in mind that these are not community projects. They are managed by European governments, not by Brussels. The two procedures are definitely at odds. Each is looking after its own interests. Fervent advocates of community programs stress the size of the endowment—projects get 50-percent financing, not 35-percent like EUREKA projects... Opponents denounce the time-consuming application procedure, the interventionism bred by invitations to bid, the Brussels lobbies, the precompetitive character of the projects selected. Actually, although EUREKA looks more accessible, it is nevertheless true that, there too, PMEs were not well represented.

This is changing. Today, the ANVAR finances a consultant's assistance in helping a PME prepare a EUREKA application. A boon for consulting firms. Essor Europe, for instance, has filed six label applications this year. Philippe de Montgolfier, its CEO, emphasized EUREKA's main fault: "French companies wish to ally themselves with their natural partners. Very often, these are German companies. But the German government grants very little financing for these projects. This is the manufacturers' main regret." Finally, EUREKA projects had the reputation of being close to the market, but until recently this was not quite so. Of the 623 projects launched since 1985, only 47 succeeded. Project duration, four to five years, had nothing to envy to community programs. Especially as the latter were not really as precompetitive as they were said to be. For Philippe de Montgolfier, "there is an absolute contradiction between the precompetitive character publicized by the Community and its desire to yield to popular pressure which wishes to know what actual prospects exist for these projects."

A PME's whole skill often resides in its ability to achieve this feat. Starting with an intermediate-term project, it must not fail to define subprograms geared to immediate spinoffs for its own use. Verilog, a company specialized in software engineering and software quality evaluation tools (280 people, Fr115 million) is well aware of it. It is currently participating in 2 three-year RACE programs geared to telecommunications. "Every year, we will integrate the developments completed under the RACE programs into our software, and we will market the new versions six months later," Vincent Contre, in charge of Verilog's telecommunication activities, explained. The Toulouse company's strategy should certainly be compared with its previous experience. After a first successful ESPRIT program—after three years, the result was the Geode software, which now accounts for 25 percent of Verilog's sales—it chose to carry out an ESPRIT-2 project on software certification. An effort amounting to having four engineers work full time for four years. What spinoffs did it get? The answer is still vague. At any rate, Verilog did not bid for ESPRIT-3 and now seems to be concerned about obtaining fast spinoffs under RACE. The Sitia company (15 people, Fr6 million), an emanation of the Nantes Central Engineering School and project leader for a BRITE-EURAM project on quarry automation, is also interested in intermediate results. A year and a half after operations started, it sold the first version of a quarry simulation and optimization program.

It is interesting to note that most of the companies which had a taste of European programs want more. How come they are "hooked"? "What interests us is not so much the research aspect, but rather access to markets. How could a PME run by five people gain access to corporate decision-makers?" Gabriel Sira answered. For Michel Verel of Vecsys: "This forces us to make European contacts, to open our company, to become aware of European standards." Alain Roan of Verilog is also concerned about

internationalization: "We were a PME from Toulouse. We have acquired European status. We had a technology, that is true, but we could not have succeeded alone. The ESPRIT program enabled us to test our technology on large users." For his part, Hubert Zimmerman, CEO of Chorus, the overachiever of the ESPRIT program, makes use of the European researcher pool: "We have a research potential of 300 people."

There remains to be seen if all the PMEs that have not yet done so are ready to invest in such projects. At what risk level: as subcontractors, partners, or project leaders. And while complying with a few implicit rules. For instance, although in most cases it is the CEO who decides on a European program, prepares the application, and negotiates with partners, which also takes time, a project leader must be appointed to take over after the project has been approved. The project leader must be capable of managing the program budget. The company must also have adequate cash flow. It must be in a position to invest time in preparing the application. The cost of filing a BRITE-EURAM application is estimated at Fr50,000 to Fr80,000. Knowing that one out of 10 projects will be selected... Not to mention that, as in any school test, it is not the best student who succeeds, but the one who understands what is expected of him. In short, it is difficult, it is costly, but it can be very profitable!

[Box, p 10]

Euromanagement Opens the Circle of PMEs Familiar With European Programs

Some PMEs understand very well what benefit they can derive from European programs. This group of initiates regularly renew their research contracts. But what about the others? The European Commission, through DG XIII which takes an interest in the fate of small businesses in Europe, became concerned about the situation. As a result, it launched the Euromanagement program jointly with the Technofi consulting company. The goal is to have 48 service providers identify some 650 industrial PMEs whose profiles warrant a European approach. One thousand research projects were thus defined. There remains to be seen whether Brussels will go further and help these companies finance their applications. A second stage of the Euromanagement program will focus more specifically on making PMEs aware of European standards and certification. It should start early in 1993.

1991-94 BRITE/EURAM Projects Total One Thousand

93WS0148A Paris AFP SCIENCES in French 19 Nov 92 p 1

[Unsigned article: "BRITE/EURAM Program: One Thousand Research Projects"]

[Text] Paris—On 12 November, the National Technical Research Association (ANRT) announced that the large European research program BRITE/EURAM (industrial technologies and materials), which was the topic of a European Community (EC) meeting in Lyon organized by ANRT, is already conducting 1000 research projects that involve 5000 partners in 17 countries.

Endowed with ECU670 million (4.5 billion French francs [Fr]) for the 1991-1994 period, BRITE/EURAM encourages projects conducted jointly by several enterprises and laboratories in at least two member nations, by financing up to 50 percent of their costs. A new call for bids is underway until the end of February 1993 for a total of ECU300 million from the EC.

Since 1985, BRITE/EURAM is interested in all private enterprises and all research agencies, seeking to integrate R&D into each stage of materials and product development. Its major research orientations cover raw materials, recycling and recovery of industrial wastes, new and improved materials, as well as product design and fabrication with special emphasis on aeronautics.

JESSI Head Requests Program Extension

93WS0148D Paris AFP SCIENCES in French 19 Nov 92 p 23

[Unsigned article: "JESSI President Requests Program Extension Beyond 1996"]

[Text] Munich—On 11 November, in Munich, Raimondo Paletto, chairman of the European program JESSI [Joint European Submicron Silicon Initiative] asked that the program be extended beyond 1996. "The future of the European microelectronics industry is intimately linked to advances based on silicon chips," Mr. Paletto pointed out at the Electronica fair.

Established in 1988 and redesigned in 1991, the program should have ended in 1996. Its 1992 budget is about ECU350 million, financed as follows: 50 percent by the industries of the participating countries, 35 percent by the governments, and 15 percent by the EEC. It is headquartered in Munich.

Mr. Paletto also requested greater JESSI financing from the EEC: "Microelectronics represents nearly ECU1 billion of European products per year in such industries as automobiles, telecommunications, electronics and recreation, mechanical engineering, and office automation. With the currently available reduced resources, the microelectronics industry cannot assure the competitiveness of the European industry in the future."

France Inaugurates New Technology Park

93WS0162B Paris AFP SCIENCES in French 26 Nov 92 p 2

[Unattributed article: "Inauguration of Descartes City, the Marne-la-Vallee Scientific Pole"]

[Text] Marne-la-Vallee—The Descartes City in Marne-la-Vallee, the future large scientific pole in the eastern Paris area, was inaugurated officially on 19 November in

the presence of Messrs. Jean-Louis Bianco and Hubert Curien, respectively minister of infrastructures and research.

The two ministers laid the foundation stone of the buildings that will house the National School of Civil Engineering (ENPC) and the National School of Geographic Sciences (ENSG). Founded in 1747 and the oldest French engineering school, the ENPC will therefore eventually leave Paris, while the ENSG will abandon Saint-Mande to join the scientific, technical, cultural, and economic facilities already installed at Marne-la-Vallee.

Descartes City was launched in 1983. Covering 130 hectares, it will include a scientific city, a technology park, and an urban center cooperating and operating in synergy. The scientific city is expected to house 13 higher institutions: one university, nine higher schools, and three research centers (projections are for 20,000 students around the year 2000).

Already now, over 4,000 students live in Descartes City, either at the university—one of the four new universities in the Paris area, operating with 1,600 students—or in the other institutions that are already established (construction, town planning, photo-audio, etc.). In a few years, they will be joined by students of architecture, business management, administration, finance, statistics, etc. The technology park, a place designed for companies geared to leading-edge technology and services, will eventually provide jobs for 6,000 people.

France's INRIA To Focus on Applications

93WS0164B Paris L'USINE NOUVELLE in French 3 Dec 92 p 27

[Article by Dominique Commiot: "INRIA Seeking Closer Ties With Industry"]

[Text] INRIA [National Institute for Research on Data Processing and Automation] celebrates its 25th anniversary next week. Public-sector research in computerization has produced meager results. It is turning actively toward applications.

A lean harvest for the National Institute for Research on Data Processing and Automation [INRIA] as it prepares to celebrate its 25th anniversary next week. In the field of its predilection, the development of software, it has missed the boat on all the major technological advances. The data base management systems, which have been highly successful commercially, are all American. The United States also dominates the niche of software engineering workshops, the tools that automate the production of programs. The same is true of the softwares adapted to the new massively parallel architectures.

"Acknowledgment of this failure is harsh, but not lacking in realism," says Alain Bensoussan, president of the Institute since 1984. All the major information processing innovations, in computers as well as in software, have originated, and continue originating, in the United States.

Does this mean we should throw in the sponge? In any case, that has not been the attitude of the government, which has lavished funds on the INRIA, whose budget, 475 million French francs [Fr] this year, has steadily grown. It employs 250 high-level researchers, hosts 750 scientists from abroad, and has sophisticated computer equipment. Government support of basic research is not unique to France. The American universities, even the private ones, are extensively supported by public-sector research contracts. The difference is that, more often than not, their work leads to industrial successes. Digital Equipment, for example, was an outgrowth of research done at the Massachusetts Institute of Technology in Boston.

Europe has to cope with one fundamental difficulty: its scientific culture, long bent on pure advancement of knowledge. "But," says Alain Bensoussan, "the mentality of the researchers has changed greatly." Four observations tend to bear out his optimism. The researchers have realized that the most interesting problems are encountered not in the theory but in the applications of findings. Achieving an industrial success is becoming an essential concern. The mutual contempt harbored by the industrialist and the scientist for each other is giving way to a more constructive dialogue. Twenty-five years ago, a researcher who created an enterprise was scorned rather than praised by the scientific community. Today, that is no longer the case.

The industrialists are less enthusiastic. INRIA's privileged partner, Bull, leans very heavily on INRIA for support of its R&D policy. And some 10 of Bull's researchers work in the Institute's laboratories. But the industrial fallouts are scant. Michel Elie, Bull's head of cooperation with INRIA, can only cite a few developments in man-machine interfaces, failure tolerance of computers, and multimedia. The big service companies such as Cap Gemini Sogeti [CGS], Sema Group, etc... maintain very modest ties at best with INRIA. "Their research is rather distant from our day-to-day concerns," says Jean-Louis Bernaudin, marketing director of CGS.

Alain Bensoussan is not unaware of these criticisms. Under the impetus being given it by Mr. Bensoussan, INRIA is endeavoring to turn toward the marketplace without for that reason neglecting basic research, a domain in which it shines, as attested by its contribution to the spectacular French advances in the deciphering of the human genome.

INRIA is present in the market through three subsidiaries and 15 start-ups that have emerged from its ranks since 1984. These start-ups have created 700 jobs and have annual revenues totaling Fr385 million, exactly equaling the Institute's budgetary appropriation.

One of them, 02 Technologies, formed in 1990, is among the world's top specialists in a technology that is destined

to play a prime role in information processing: programming languages and object-oriented data base management systems. The prospect of a true commercial breakthrough in these domains beckons. It would suffice to sweep away all existing criticisms.

Thousand Researchers in Information Processing and Automation

INRIA's 1992 budget totaled Fr475 million, 20 percent of which represented its own resources. Its staff of 1,300 persons includes 250 full-time researchers of its own, 330 researchers from other organizations, and 330 college graduates-in-training. With four laboratories located at Rocquencourt (Yvelines), Nancy (Meurthe-et-Moselle), Sophia-Antipolis (Alpes-Maritimes), and Rennes (Ile-de-Vilaine), respectively, its main lines of research are:

- Parallel architectures, data bases, and systems networks;
- Symbolic computation, software engineering;
- Artificial intelligence, man-machine interaction;
- Robotics, image, vision;
- Signal processing, production engineering;
- Scientific computation.

Belgian Participation in Latest EUREKA Projects Assessed

93BR0192 Antwerp DE FINANCIEEL-ECONOMISCHE TIJD in Dutch 19 Nov 92 p 11

[Text] Brussels (BELGA/TIJD)—Flanders is involved in five of the 27 new research projects which were approved at the recent meeting of the High Level Group for EUREKA. EUREKA is the European nonmiltary answer to the American Star Wars program.

The five Flanders-based companies which were selected are ICI-seeds-SES from Tienen, Asea Brown Boveri from Zaventem, Origin Technology from Mechelen, Identity EEIG [European Economic Interest Group] from Mol, and Danis-Arkova from Ardooie-Koolskamp.

ICI-seeds-SES is involved in a biotechnology project concerning the use of sugar beets in the non-food sector to produce bioethanol and galacturonic acid. ABB is involved in automating container cargo loading using robots.

Origin Technology is involved in a project concerning an integrated information and control system for monitoring consecutive logistical operations. Identity EEIG is working on optical sensors using polarinetic hollow fibers. Danis-Arkova is working on a project concerning the treatment of pig manure so that it can be dumped in surface water.

The five projects amount to a total budget of approximately 600 million Belgian francs [BFr]. The part of the research to be carried out in Flanders represents a global amount of more than BFr100 million. EUREKA is the nonmilitary answer to the American Star Wars program. It must not be confused with EC research programs which are tailored to precompetitive research. Not only EC countries participate in the EUREKA program; all western European countries are involved and, for some time now, eastern European countries have also been invited, although only Hungary has responded to date. The EUREKA projects are closely linked to the market: In principle, these projects must develop a marketable product within two years.

The cabinet of the Flemish Premier Van Den Brande stated that the EUREKA label would enable project leaders to apply for a subsidy from the national or regional government. However, Van Den Brande deems the marketing prestige of the EUREKA label more important.

Belgium is currently participating in approximately 80 EUREKA projects.

Dutch Industry Receives 15-Million-Guilder Technology Aid

93BR0234 Amsterdam COMPUTABLE in Dutch 27 Nov 92 p 1

[Text] Minister of Economic Affairs J. Andriessen has announced a new subsidy scheme for stimulating "branch-related" technology centers. It will allow organizations operating in a specific branch to apply for subsidies for technology projects or for setting up and running a technology center in their branch of industry.

The ministry wishes to support support branch-related projects aimed at identifying technological developments, converting these developments into technological know-how, and transferring this know-how to entrepreneurs working in this branch.

The subsidy scheme will run for a period of three years. An amount of 5 million Dutch guilders per year will be provided. The maximum subsidy for a project that does not involve setting up a center will be 250,000 guilders.

EC Commission Requests Increase in Information Technology Funding

R&D Aid To Double

93BR0235A Amsterdam COMPUTABLE in Dutch 27 Nov 92 p 3

[Article: "Four Billion Guilders for Information Technology Industry"]

[Text] The European Commission has proposed to the Council of Ministers that financial support to companies and institutes cooperating in crossborder research and development should be nearly doubled during the next two years. In particular, substantially more money will be made available to the IT [information technology] industry. According to the recommendation, which will officially appear on the EC Council of Ministers agenda in December, approximately 11 billion Dutch guilders will be spent on the second part of the Third Framework Program for Research and Development encompassing 1993 and 1994. Almost 4 billion guilders of this amount will be allocated to the IT industry. This amount is considerably more than in 1991 and 1992, when 2.2

billion guilders were allocated to the IT industry from a total amount of 5.7 billion guilders.

Support to Data Communications Industry

93BR0235B Amsterdam COMPUTABLE in Dutch 27 Nov 92 p 8

[Article: "Delors Fights for European Data Communications"]

[Text] Brussels—The European Commission wishes to create an extra incentive for the EC information technology [IT] industry through increased investments. According to observers in Brussels, the primary objective of this plan is to support companies such as Bull, Philips, and Siemens, which are currently hard-hit by the effects of the current crisis in this sector.

According to insiders, the French are trying in this manner to help the loss-making Bull obtain extra orders. The Hague, too, does not react unfavorably to this plan as Philips also stands to benefit.

Delors's [EC Commission president] plan, which will be officially presented in December, will, among other things, provide a new stimulus for data communications within Europe. Extra investment in the so-called "Trans-European Networks" is expected to boost economic growth.

Moreover, the EC hopes that this action will break the deadlock concerning these networks, which was caused by the failure to ratify the Maastricht Treaty. As this has resulted in uncertainty about EC-provided funding, the danger exists that these plans may be shelved. Delors also wants to involve Eastern Europe in these data communications networks. His plan is in keeping with the tendency to devote more attention to the infrastrucure. Japan has already reached this stage. The President-elect of the United States, Bill Clinton, has announced that he wishes to invest $100 billion in the data communications infrastructure in his country. Individual EC countries often do not succeed in making funds available for this at national level.

French Government Creates Interest Group for Power Electronics Industry

93BR0252 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 3 Dec 92 p 12

[Text] An interministerial group was set up in 1990 to defend the interests of the French power electronics industry. From now on, this group is open to all French electronics manufacturers.

Following the disappearance of French semiconductor supply sources (Thomson Semiconductors power transistors unit in Aix-en-Provence, Thomson's GTO [gate turn-off switches] unit in Tours, Power Compact, Powerex), the French government, French laboratories, trade unions, and other organizations do not want to see the French power electronics industry, one of the most innovative in the world, die out. Thus, in 1990 the Ministries of Education, Defense, Research, and Transport, the CNRS [National Scientific Research Center], INRETS [National Research and Technology Institute], EDF [French Electric Company], and GIMELEC [Interministerial Electronics Group] created GIRCEP (Interest Group for Manufacturers and Research Centers in Power Electronics). GIRCEP's aim is to give the French electronics engineering industry an independent organization for of expertise, advice, and dissemination of results of specific and coordinated projects.

The absence of French power component manufacturers in the group, and the fact that individual industries are "going it alone" by working with particular research laboratories, have not facilitated GIRCEP's task. GIRCEP is now opening itself to all French manufacturers and research centers, whether public or private. The association's objectives are widening and now include coordination and promotion of power electronics in France.

Its current activities are as follows:

- Constitution of an IGBT [insulated-gate bipolar transistor] center of expertise (ESIM [Advanced Engineering College of Marseille, INRETS, LEG [Grenoble Electrotechnical Laboratory]);
- Development of studies and measures necessary to design physical component models, to identify the main parameters, to study them separately, to model and validate these studies through laboratory experiments (ESIM, LAAS [Laboratory for Automation and Systems Analysis], LEG);
- Promotion of prototype manufacture or of complete or partial implementation of original technological processes (LAAS, LEM [Electro-Metallurgical Laboratory], LECI);
- Construction of a circuit-oriented component (IGBT) (LAAS);
- Implementation of a long-term program on the study of the behavior of high-temperature components (Cegely, LCPS, LPM [Materials Physics Laboratory], LEG)

[Box]

Results Already Obtained by GIRCEP

Since its creation in 1990, the work done by the interministerial group for the defense of the French electronics power industry has achieved a number of results:

- Results of analyses on high-power GTO's at the INRETS expert center;
- Definition of a platform measuring IGBT characteristics (ESIM);
- Creation of a GDR (Research Group) bringing together CNRS components laboratories;
- Setting up a high-temperature study program (Cegely).

GIRCEP has also proved the feasibility of a high-voltage MCT (LAAS).

Fifteen researchers and technicians are currently involved in ongoing programs.

France: Official Council Evaluates Research Policy

93BR0255 Paris RECHERCHE TECHNOLOGIE in French Oct-Nov 92 pp 8-9

[Text] The Higher Council for Research and Technology [CSRT] has submitted to Hubert Curien its annual report evaluating the national research and technological development policy. The French R&D system has now reached a quality level that compares favorably with that of its principal partners and competitors. At a time when the single European market is being established and international competition and cooperation are intensifying, this effort should be continued. The 1993 civilian R&D budget follows this direction: steady budget increases and perseverance in choosing priorities must enable the French research community to further improve its world position substantially.

This fifth CSRT report highlights the progress made over the past several years and lists some recommendations that are summarized below.

- The French R&D system is specific in that the percentage of government-funded research is larger than in other industrialized countries. Some deficiencies should, however, be noted so as to correct them. In this respect, potential rigid factors must be identified and innovative strategies be developed.
- The deficit in industrial research and technological development, which affects mainly the sector of small and medium-sized enterprises [SMEs], makes it necessary to strengthen all the industrial research assistance schemes (both national and European) by emphasizing, in particular, the impact that research tax allowances have on SMEs. More openness toward technological problems in the field of R&D orientation, and emphasis on the educational potential of technology universities are decisive.
- The development of horizontal network structures linking research, industry, and education institutes is a major efficiency factor for encouraging communication and exchanges among the various elements of the French R&D system.
- Decompartmentalization of public research organizations and development of their interaction and their multidisciplinary and intersector activities with other research-related organizations must remain major goals.
- Efforts to increase the functional mobility of research staff must be continued. Researcher exchanges and availability, as can be done under EPST [State Science and Technology Companies] and EPIC [State Commerce- and Industry-Oriented Authority] contracts, should be improved and used to a much larger extent.
- An approach in which research is integrated more systematically into higher education courses appears to provide useful basic education to those graduates who quickly start some economic activity (without Ph.D. specialization) and enables them to better meet the specific needs of SMEs to stay abreast with relevant technological developments and obtain them through technology transfers.
- The separation between higher education and research is sharper in France than in other countries. Whereas teaching in universities or elite schools frequently goes along with research, the reverse is not always the case in the research establishments. It would be good nowadays if research activities would integrate a function of higher education more generally.

  Major efforts have been conducted these last few years to expand participation by research scientists in university education and to encourage their transfer to higher education levels. It is now important to complement the measures already in effect by contractual and quantitative provisions that provide the possibility for a minimum number of transfers between research and higher education.

  Some thought should be given to the intrinsic mission of higher education which could be assumed by public research institutes alongside universities and elite schools.
- The combined emergence of the regional and European dimensions raises the problem of defining and fairly distributing functions among the various players. The localization plan of the Research Ministry was well prepared on the basis of consultations through the White Papers that had been prepared by regions. Good execution of this plan implies continuity and vigilance. It must be a long-term plan and must not be refuted later.
- The growing internationalization and, more specifically, Europeanization of our national R&D policy leads us to carefully consider disequilibriums which may affect our scientific and technical exchanges and consequently France's inclusion in the international networks.

  The conditions for accepting students from European and other developed countries who come to prepare a thesis in France must be improved. The number of French researchers residing for long-term assignments in foreign, particularly European, countries must be balanced by the number of researchers from these countries staying in France.
- EC research and technological development programs: The experience of the last three years has shown that procedures for preparing, approving, and managing EC R&D projects are no longer suited to the volume they have now reached, nor to the fast scientific and technological changes as a result of international competition. The EC R&D tool thus has to be reconsidered thoroughly.

The three European frameworks of scientific, technical, and industrial cooperation, i.e., the shared-cost programs, the EUREKA (innovative technologies) program, and the concerted COST [Cooperation in Science and Technology] programs, must constitute an efficient and coherent unit. To this end, the complementarity of these three programs must be optimized on the basis of their specificities.

- Research is now at the core of society's debates. The role of scientific and technical advances as essential factors for mankind's progress, which has only recently been widely accepted, is now challenged. Environment and living conditions are opposed to economic competitiveness. These debates involve, of course, the authorities, who control these factors.

  Multiplication of consultative agencies, often without funds, risks running counter to the desired goal. These consultative procedures should, therefore, be made more efficient and their creation should compulsorily be accompanied by the allocation of funds necessary for their operations.

A lot remains to be done to improve knowledge and, consequently, understanding of these stakes by the citizens. This begins by education. Multiplication of contacts among students, research scientists, and engineers must be continued and strongly supported. Such knowledge and understanding of the stakes then go through a phase of education-information, more particularly through exchanges involving scientists, engineers, decisionmakers, and the public. In this respect, it seems indispensable to strengthen the complementarity between audiovisual and written media, and to improve cooperation among publishers, radio, and television.

CORPORATE ALLIANCES

Sweden: Ericsson's Worldwide Joint Ventures Noted

93WS0150A Maidenhead TELEFACTS in English Nov 92 pp 5-6

[Text] An expansion of their cooperative agreement has been signed by Ericsson Business Communications of Sweden and the Private Communication Systems Group of Siemens AG, giving Siemens international marketing rights (excluding the U.S.) for Ericsson's business cordless telephone systems. An earlier agreement was limited to products for the German market. Siemens intends to market the Ericsson cordless components to business customers as an optional feature on its Hicom 300 PBX and other large PBX systems.

Ericcson has entered a joint venture agreement in China with the Nanjing Radio Factory, part of the Panda Group. The new company, in which Ericsson will hold the stock majority and have operational responsibility, will manufacture radio base stations for the analog TACS mobile cellular system in China.

New Contracts for Ericsson

- BT has awarded Ericsson's U.K. subsidiary a £250 million (SEK 2,400 million) contract for the supply and installation of further AXE10 digital local exchanges over the next three years, as part of the continuing digitalization of the BT network.
- The Lianong Province Post & Telecommunications Administration of the People's Republic of China has ordered AXE equipment valued at US$116 million (SEK 625 million) to extend its network over a three-year period.
- Ericsson's Portuguese subsidiary has received an order from Telefones de Lisboa e Porto SA for a DIAX switched wideband network, comprising two local exchanges linked to a transit exchange which also acts as a gateway to other networks, and an operation and support system. The system is developed and manufactured by DIAX Telecommunications A/S, a Danish company jointly owned by Ericsson and Bang+Olufsen. Commercial service is planned for the beginning of 1993.
- An ERMES paging system has been ordered by the Cyprus Telecommunications Authority (CYTA) from Ericsson Magnetic AB in conjunction with Tecnomen OY of Finland. Eleven base stations, a transmission network, and a paging network controller will form the first phase of the system.
- Ericsson reports the successful test operation of a complete NMT-450 system in Moscow; the installation was carried out under a preliminary agreement between Ericsson Radio Systems AB and US West International BV, Millicom International Cellular SA and MNTK Eye Microsurgery Institute. Moscow Cellular Communications has now put the system into commercial operation.

France's Dynateg Acquires Danish Technology

93WS0164A Paris L'USINE NOUVELLE in French 3 Dec 92 p 27

[Article by N. B.: "Dynateg Acquires Technology for UPS in Alliance With Denmark's Silcon"]

[Text] The French firm will endeavor to boost the sales of the Danish firm's products, which are not selling well in France.

Dynateg, the Dynaction group's energy conversion member—350 million French francs [Fr] in revenue, and Fr24 million in profit, expected for 1992—is returning to the standard UPS [uninterruptible power system] equipment market. Having abandoned, in 1988, the manufacture of UPS equipment designed especially for computer installations, it has now formed an alliance with Denmark's Silcon, whose sole activity is UPS equipment. The agreement provides for a technology transfer from

Silcon to Dynateg. Dynateg, which is already manufacturing custom-designed UPS systems—used in telecommunications, the military, nuclear power plants, etc—through its Houvenaghel subsidiary at Fecamp (Seine-Maritime), will incorporate the Danish technology in its products. Concurrently, it may also manufacture sheet metal parts for Silcon.

Fr10 Million in Sales in 1993?

Dynateg will take over Silcon's French commercial subsidiary, whose sales have never exceeded Fr5 million in France. Its objective is to exceed Fr10 million in 1993.

Silcon, with a revenue of Fr300 million, 600 employees, and approximately 10 percent of Europe's standard UPS equipment market, ranks third in Europe behind Merlin Gerin and U.S.-based Emerson. These rankings reflect those in the thyratron inverter market. The thyratron inverter together with batteries and a charger comprise the key component of the UPS, which Silcon manufactures in Denmark, Ireland, and Switzerland. Dynateg, which employs 600 persons, is also strengthening its position as France's number one in energy conversion, a position it gained in February, 1992, with the takeovers of Sodilec and Micro Gisco.

Thomson CSF, Deutsche Aerospace Cooperate in Electronic Warfare System

93BR0214 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 19 Nov 92 p 14

[Text] Thomson-CSF and the Radio and Radar Systems Group Division of the German company Deutsche Aerospace have recently signed a cooperation agreement in the field of land-based electronic warfare systems. The agreement, the conditions of which will be laid down in late 1993, involves a joint effort on the study and development of new products (mainly radars) and cooperation on projects already in operation. In electronic warfare systems (radars, telecommunications, and optical detection systems), Thomson-CSF has sales revenues of approximately 2 billion French francs [Fr], putting them into first place on a European scale. Electronic warfare systems (listening, scrambling, and protection against listening and scrambling) represent a market worth Fr5 billion in Europe and Fr30 billion worldwide. This agreement reinforces the link between the two companies, which have been working together since the beginning of the year on the "Ocean Master" maritime patrol radar, where they share development and marketing. In addition, negotiations are underway for a joint agreement between the Deutsche Aerospace division and GEC [General Electric Company]/Thomson Airborne Radar, a joint company set up in 1991 by GEC Ferranti and Thomson-CSF to develop the future European active antenna radar for combat aircraft.

CORPORATE STRATEGIES

Siemens's Friedrich on Importance of European Microelectronics Industry

93WS0092C Duesseldorf HANDELSBLATT in German 4 Nov 92 p 31

[Article by Hans Friedrich: "Reliable Supply Is Not Enough"]

[Text] HANDELSBLATT - TL, 3 Nov 1992—There is no other technology that has been marked by such a rapid development as microelectronics and which has revolutionized almost all existing technologies in so short a time. In so doing, it has radically changed industry and technology. Microelectronics has become the base technology of industry; it is an essential component of the technical and economic structure of production and is absolutely decisive for the competitiveness of virtually all industries.

The electronics industry is the fastest growing industrial sector and by the end of this decade will become the largest industrial sector as well. At the same time, however, Europe shows its largest foreign trade deficit precisely in the field of electronics. It amounted to about $35 billion in 1991, and by the end of the decade will grow to $50 to $70 billion. This is the result of our competitive weakness, especially in the fields of data technology and consumer electronics. Because these fields, with about 65 percent of the market, are by far the greatest users of microelectronics, but also because they represent the driving force for microelectronics owing to the dominating function of microelectronics for the technical and economic efficiency of their equipment. A clear relationship exists between the competitive strength of microelectronics and the information technology industry within an industrial sector.

Even a Lead of a Few Months is Decisive

The main characteristic of microelectronics and consequently also the main challenge for the producer and user is the unusually rapid progress that has been made in this technology. About every three years, a new technology generation enters the market with a new storage generation. Four times the number of electronic functions (storage bits or transistors) are integrated on a silicon chip because of the finer structures of transistors and conductors. For example, in the case of the recently introduced 16-megabit storage, over 30 million individual components are integrated on a surface of about 1 cm^2. This kind of technological progress provides the user of microelectronics:

- a constant reduction in cost of about 30 percent per electronic function;
- a reduction in space requirements and in the electrical power consumption of complex electronic systems;
- an improvement in electrical performance, like switching speed, quality, and reliability.

Concurrently with this, the design tools for the development of microelectronic circuits are improved and made more efficient, so as to be able to develop ever more complex circuits and systems rapidly and reliably. This progress can not only be used in the development of new products, but it also represents a considerable improvement and efficiency potential in existing equipment and systems.

Whichever company introduces these advances in its products more quickly and efficiently, achieves a competitive advantage. Because of the overall general progress, even a few months time advantage has a substantial effect. Consequently, in all branches of industry and in all applications, "the time to market" has become the most effective competitive factor.

In the past we have experienced how, especially in the microelectronics-intensive fields of entertainment electronics and in data technology, a race in product innovations and prices determines product availability and the competition.

Existing products in entertainment electronics have been constantly improved, provided with more comforts and additional functions, while the prices have been consistently reduced. In terms of video-recorders, videocameras, CD players, and digital audio tapes, microelectronics has made very complex electronic systems accessible for broad applications. Likewise, the decentralization in data technology right down to the personal computer is a result of microelectronics.

For the so-called multimedia technology (e.g., the telephone for voice communication is being expanded through the addition of text and moving pictures), the information and communications technologies will in future require, together with high definition television (HDTV), such a variety of electronic functions that even more progress will have to be made in microelectronics to do the job.

We have gotten accustomed to accept innovations like ABS and the airbag in our automobiles and to the drastic reduction in fuel consumption made possible by electronic ignition control. These developments will be followed by increased improvements in comfort, safety, and economy. Independent of the automobile itself, traffic control and information systems will also substantially contribute to driving safety and environmental protection. Microelectronics technology is not an end in itself. It only serves its purpose when it is installed in a piece of equipment owned by a customer. The extraordinary efforts to efficiently manage technological progress must therefore be matched by an equivalent effort to convert the most advanced technology to the end user's benefit.

Basis for a Variety of Technical Innovations

Due to the close interaction between technology and system architecture, effective development depends decisively on close cooperation between producer and user. Precisely for that reason, the large system houses have integrated the various microelectronics fields. It is also the reason why this industrial chain of cooperation is absolutely necessary in every industrial region. The danger of a dependency in microelectronics has nothing to do with microelectronics products. Rather, the danger lies in the possibility that this close interaction may not be effective enough in a particular region.

It is also not acceptable that other regions produce for mature technologies in Europe. Innovations occur in the laboratory, and the roots of this are bedded in industrial and non-industrial research. In microelectronics it is not a matter of reliable supply as is the case for other industrial preliminary products. Rather it is a matter of having the capability of independently converting technical superiority into product and competitive advantages.

Consequently, our regional industry can only achieve innovations and competitive advantages when a complete microelectronics industry exists. This requires research and development as well as competitive production. It is precisely from this regional industrial "food chain," that the Japanese and U.S. microelectronics industries gain the strengths to prevail on the world market. The European microelectronics industry must also learn this lesson.

Philips: Negative Results Impose Further Restructuring

93BR0187 Amsterdam COMPUTABLE in Dutch 13 Nov 92 p 14

[Article by Paula van de Riet: "Philips Continues To Produce PCs, Continuation Assessed by Country"]

[Text] Eindhoven—Following the disclosure that Philips is now, for the first time in its history, faced with a deficit of 155 million Dutch guilders, the firm is about to embark upon a new round of reorganization. According to Vice President Henk Appelo, this situation will not result in the closing down of the concern's PC activities, even though this sector is under considerable pressure at the moment. A survey will, however, be carried out on a country-by-country basis to ascertain whether the continuation of these activities is worthwhile. Profitability will be a major criterion.

According to Vice President Appelo, the PC activities (part of the Consumer Electronics division which has suffered the most) will only close in those countries which do not make sufficient profit. Recently, Philips announced the closing of its PC divisions in Ireland, Greece, Scandinavia, and Britain. This action resulted in the closing of the European distribution company in Tilburg. From now on, PCs will be obtained directly from the factory in Montreal. According to Appelo, "The decision to close country divisions is a matter which is constantly under review. The Dutch PC division is not yet in danger." Appelo also stated that there were no plans to completely shut down the computer activities.

Deputy Director W.G. de Cock stated in an interview which was published in COMPUTABLE that the Dutch PC division will return to profitability this year and that it has never made a loss on a yearly basis.

The managers themselves will be responsible for identifying potential savings during the intended reorganization of the Consumer Electronics and Components division. During the presentation of the quarterly figures, Appelo stated that this can result in the partial closure of product divisions, but not complete divisions. According to Philips management, no further reorganization costs are planned in these divisions.

The measures to be taken will mainly affect Europe. The U.S. will also be slightly affected, but the Far East will remain untouched. According to the vice president, "developments over there are positive." In Appelo's opinion, Philips's competitors also have overcapacity problems; Philips wishes to calmly assess what it can do about it. The immediate closure of factories is not currently a point to be considered.

Appelo stated that it will take a few years before the new products—HDTV [high-defintion television], CD-I [CD-Interactive], and DCC [digital compact cassette]—have a noticeable impact on corporate profits. "The consumer and television markets will not change significantly next year. We will have to wait until 1994 before improvements can be expected."

The vice president also stated that he wishes to take measures to improve Philips's corporate image with the public at large: "It is now too unfavorable." He also pointed out that the large-scale "Centurion" streamlining operation which was implemented during the last two years has worked efficiently: "You only have to look at the Lighting and Professional Products and Systems divisions to see the beneficial results of this operation. If the consumer electronics market had not collapsed, we would now be heading in the right direction."

During the third quarter, Philips lost 154 million guilders in comparison to a profit of 188 million last year. The turnover also fell by almost 1 billion guilders when compared to 1991, from 13.7 billion to 12.7 billion guilders. Appelo does not rule out the possibility of a loss for the whole of 1992. Earlier this year, he stated that he would not expect to make more than half of the profit made last year (981 million guilders).

Results of Divisions

The trading results for the Lighting division climbed from 370 million in 1991 to 607 million guilders in 1992. The turnover increased from 5.3 billion to 5.4 billion guilders. The share of the market for innovative lighting grew slightly.

The Professional Products and Systems division suffered a small drop in profits (from 335 million to 348 million guilders [as published]). The turnover also fell from 8.7 billion to 7.3 billion guilders. In particular, medical systems sales increased. The improved results for medical systems, industrial electronics, and defense activities in the United States were, however, almost completely erased by the price reductions for communications systems. Appelo also stated that he did not yet consider selling the telecommunications activities.

Consumer products only made a 145-million-guilder profit this year, compared to 619 million in 1991. The turnover increased from 18.3 billion to 19.1 billion. Despite price reductions on the order of 6 percent, consumer electronics contributed to the increase in turnover, together with domestic appliances and products for personal care. Philips attributes the fall in profits predominately to the reduced selling prices and the high promotional costs for introducing CD-I and DCC to the market.

The Components and Semiconductors division was affected by the pressure on prices and the production restrictions in the television industry in Europe and Brazil.

France: Taiwan's Mirage Order Benefits Defense Electronics Firms

93BR0232 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 26 Nov 92 p 13

[Article signed F.F.: "Defense: 60 Mirage Aircraft for Taiwan and 1,000 missiles for Matra"]

[Text] Taiwan's order of 60 Dassault Aviation Mirage-5 fighter aircraft should benefit electronics firms such as Matra, Thomson-CSF, Dassault Electronique, Sextant Avionique, and Sagem.

And 60 to go! Taiwan's order of 60 Dassault Aviation Mirage 2000-5 aircraft, although it has not yet been confirmed by the government and the firms involved, will bring much needed relief to the contracting parties (the deal totals $3.5 billion, or 18.5 billion French francs [Fr]). This is not only because of the 60 aircraft, whose delivery will start in 1995, but also due to future orders that the deal is likely to generate (Dassault had not sold any combat aircraft for export since 1986). According to the military planning bill, which should be submitted to the National Assembly at the end of November, France should convert 37 Mirage 2000 aircraft from version RDM to version 2000-5, for a cost of about Fr2.5 billion which would essentially benefit the electronics industry. This guarantee from the French Armed Forces should free up some other contracts (there is talk of 20 to 40 planes for Abu Dhabi, for example). The Mirage 2000-5's main difference from the previous versions is its RDY radar: developed by Thomson-CSF, this Doppler radar can track up to eight targets simultaneously with its one billion operations per second maximum computing power. It represents 10 percent of the aircraft's cost, which totals an estimated Fr300 million. The electronic countermeasure system (11 percent of total cost) was developed by Dassault Electronique and Thomson-CSF; the avionics equipment (20 percent) was

developed by Sextant Avionique, Intertechnique, and SFIM [Measurement Instruments Manufacturing Company], with Sagem building the inertial system.

Impulse To Adopt Matra Missile on Other Aircraft

However, the deal's major beneficiary is the maker of the aircraft's weapons. Taiwan is rumored to have ordered 1,000 missiles from Matra Defense. Each plane carries two short-range Magic II and four air-to-air Mica missiles for interception, combat, and self-defense. The Mica missile, which will not be manufactured by Matra until 1994, is still viewed by specialists as unsurpassed, albeit on paper. A compact, lightweight, and versatile machine thanks to its double electromagnetic and infrared guidance system, the Mica should be the first air-to-air missile able to choose its target unaided, according to level of emergency. Moreover, Taiwan's decision to use the air-to-air Mica missile may have a snowballing effect leading to it being chosen for other European fighter aircraft. Thanks to this increased activity, the French aerospace industry and its many contractors may be able to see beyond their usual gloomy outlook and limit the number of jobs lost due to their shrinking backlog of orders.

EAST-WEST RELATIONS

Hungary's Albacomp, US Microsoft Set Up Partnership

93WS0085A Budapest COMPUTERWORLD/ SZAMITASTECHNIKA in Hungarian 29 Sep 92 p 3

[Article by Gabor Revesz: "Albacomp is Microsoft OEM Partner"]

[Text] Microsoft and Albacomp announced at a joint press conference on 15 September that the Hungarian firm—as the first in the country—has become an OEM partner of Microsoft. In his introduction Janos Minarovits, president of the small cooperative, said that according to his experience there is an increased demand for legally pure software. Customers are paying more and more attention to seeing that the DOS or other programs put into operation on their computers are pure from the legal viewpoint.

Barbara Kurz, Microsoft manager responsible for sales in Hungary, said that according to the contract Albacomp has received the right to duplicate, that is to manufacture, DOS 5.0 and Windows 3.1. The OEM model produced in this way, jointly with hardware, can be sold without territorial restrictions. "In my opinion," Barbara Kurz said, "Albacomp has taken a significant step in the direction of western type sales in that it sells its configurations equipped with software, ready to go, a solution which will have an effect even despite the black market. This is the first occasion in Hungary where Windows 3.1 has been included in the package and this can be a pace setter for Hungarian computer technology firms." Asked when a really Hungarianized version of Windows will be available Barbara Kurz observed that we should be prepared for a surprise at the Compfair. After the press conference when we asked what Microsoft intended to do against the gray vendors she said those American firms which export to Hungary could be held responsible but in her opinion there is still a place for such trade in the present phase, for a few get products from America this way more quickly and perhaps more cheaply. When it was interjected that this position hurt legal distributors and dealers Barbara Kurz reacted in this way: "Every tightening could work against free trade, and one cannot develop identical prices because there will always be a supplier who lowers his prices for some reason. The price might be higher on one regional market, but the advantage of the authorized resellers will appear in support and in being up to date."

Hungary: Schrack Elektronik AG's Activity Reviewed

93WS0085B Budapest FIGYELO in Hungarian 24 Sep 92 p 31

[Article by "rg": "Schrack in Hungary"]

[Text] The large telecommunications companies of the world are increasingly interested in the Hungarian market. Schrack Elektronik AG, founded in 1872, regards the possibility of getting into the development of Hungarian telephony to be a great challenge. The leading Austrian firm in this area has no mean partner behind it, the Swedish firm Ericcson is a 33.5 percent owner. (In addition, an Austrian bank consortium owns 49.5 percent, decendants of the founding Schrack family have 16.5 percent and small stockholders control the remainder.)

In the medium term Schrack plans to develop multilevel cooperation with states of the eastern European region, in the longer term it wants to further develop this into a division of labor. Under this heading it has an interest in a Polish enterprise and has representative offices in Prague and Bratislava. It also has interests in two enterprises in Hungary, in BHG Telecom and a 75 percent interest in the Schrack Budapest Telecom Company. The cooperation agreement between Schrack Datacom and the Telecommunications Research Institute indicates contacts in Hungary going beyond trade; this agreement, signed in the first half of this year, is for sale in Hungary and joint further development of the PCM-2 and PCM-4 developed by Schrack, and for possible cooperation in production later. (The PCM-2 and PCM-4 double and quadruple, respectively, the capacity of one telephone line pair.)

This year's expected trade of Schrack Elektronik AG will be 2.9 billion schillings and the number of its workers is 1,900. It exports 20 percent of its production. Some 250 of its people work in the development division and it turns 11 percent of its receipts to development.

Schrack Elektronik AG has three fully owned subsidiaries. Of these the largest is Schrack Telecom AG the

profile of which includes main exchange equipment, digital networks, subexchanges, telephone terminal equipment, mobile telephones and security and studio technical products. Schrack Datacom is among the best known firms in data communications and transmission technology while Schrack Aerospace deals with development and manufacture of satellites on a commission from the European Space Agency (ESA).

The MAV [Hungarian State Railways] is among the largest Schrack customers in Hungary; it gave an order to Schrack for construction of a national digital speech and data network. The customers of the Austrian concern also include the DOTE [Medical University of Debrecen], the ERBE [Power Plant Investment Enterprise], the OKGT [National Petroleum and Gas Industry Trust] and the GYSEV [Gyor-Sopron-Eberfurth Railroad].

Hungary: Philips Takes Over Videoton Plant in Tab

93WS0085C Budapest FIGYELO in Hungarian 24 Sep 92 p 5

[Unattributed article: "Tab Videoton Belongs to Philips"]

[Text] The fate of the Videoton factory unit in Tab has been settled after almost a year's uncertainty; Philips and a Southeast Asian plastics manufacturing firm are founding a mixed enterprise at Tab, with the Dutch firm providing the enterprise management.

According to the plans plastic parts and entertainment electronic devices will be made in the new factory, named Europlast; the products will be sold on the domestic, other European and overseas markets. Given a favorable reception of the products it will be possible, within one or two years, to create about 250 new jobs in one of the towns leading the county unemployment list. The Philips firm will install the modern technology needed for manufacture with an investment of 70 to 80 million schillings.

BMFT Subsidizes R&D in CIS

93MI0174 Bonn BMFT JOURNAL in German Oct 92 p 17

[Text] During his visit to Moscow and Kiev, Federal Research Minister Dr. Heinz Riesenhuber obtained information on the status of the research and science aid programs in the CIS, and on the further development of scientific and technical cooperation. The BMFT [Federal Ministry of Research and Technology] had already drawn up a scientific aid program for the CIS republics and the other former COMECON states in central and eastern Europe at the beginning of the year. The 1992 supplementary budget made funding amounting to 10 million German marks [DM] available, and the 1993 budget earmarks DM30 million, the greater part of which is for space research and technology.

This financial assistance is benefiting numerous scientists. Currently, for example, the salaries and other expenses incurred for scientific posts in the CIS amounts to the equivalent of only a few thousand DM per annum each, so the projects planned for 1992 can directly support over 1,000 scientists, and working conditions are being improved for approximately 4,000 others. In the meantime, projects with the CIS have also received a great boost. In Garching, nuclear fusion experts from Nishni-Novgorod are perfecting the gyrotrons they have developed in Russia, which they will then make available for joint experiments in Germany. Items of equipment needed for setting up the new electron synchrotron, BESSY II, are being purchased in Russia.

After a short period of stagnation during the dissolution of the USSR, mutual interest in the scientific and technical cooperation that has existed for years has revived in the past few months. With the signing of a new joint laser research agreement, the German delegation's visit to Moscow made it clear that this successful collaboration will continue in the future.

EUROPE-ASIA RELATIONS

Taiwanese D-Link, Hungary's Micronetwork Systems Sign Agreement

92WS0085D Budapest COMPUTERWORLD/ SZAMITASTECHNIKA in Hungarian 29 Sep 92 pp 1, 3

[Article by Jozsef Mess: "Far East Connection"]

[Text] The Taiwanese D-Link and Micronetwork Systems (Budapest) Ltd. officially announced a distributor's agreement on 14 September. The beginning of the connection between the two enterprises goes back to 1986; since then Micronetwork has regularrly used the LAN, WAN and optical network systems of D-Link. Half a year of preparatory work preceded the publicizing of the alliance; in the past few months they have built up a national trade and service network consisting of 20 resellers.

D-Link has won a prestigious place on the market for local PC networks during the six years since its formation. It now sells 500,000 network cards annually (its largest customers include even IBM), at the same time it is one of the enterprises manufacturing Ethernet control chips. In addition its offerings include various adapters (Ethernet, Token-Ring, ARCNet, FDDI, PLA), network switching devices, connecting elements and software. The enterprise plays a leading role in these product areas in the Far East and can claim a 30 and 35 percent market share in the United States and Europe respectively. Their receipts last year reached $35 million and they are counting on $60 million this year.

As the exclusive domestic distributor for the Far Eastern firm Micronetwork is simultaneously beginning to sell three new D-Link products still unknown on the

domestic market. The DE-220 Ethernet card series of D-Link embodies a more modern version of adapters. Their interesting feature is that the designers used a software solution instead of the hardware switches (jumpers) in the cards. The DE-220 product family can be connected to an 8 or 16 bit ISA bus, makes direct use of the NE2000 drive program under Novell NetWare and MS LAN Manager and—with the aid of an error detection program—indicates operational problems automatically. Its buffer memory is 16 kilobytes; it also has BNC and RJ-45 connections.

The palm sized DE-809TP model 9 gate 10BaseT Ethernet network hub was made for stranded twin wire (unshielded) UTP networks. Another hub can be connected to one of the ports, so a network can be expanded in several stages, and can be expanded economically. The IEEE 10BaseT standard hub also has an external network adapter.

Beginning today the D-Link DE-854 transceiver will also be available here. This new item is hardly larger than a matchbox; with its aid the D-Link devices can be connected into an optical network.

Volkswagen's Plans for Chinese, Japanese Markets

93WS0090 Duesseldorf HANDELSBLATT in German 4 Nov 92 p 27

[Text] Peking—For Volkswagen, China is the market of the future. This is what was said by the chairman of the board for the car company, Daniel Goeudevert, in Peking. He said that the "correctness of the China strategy" was not a matter of debate at VW; now what was important was to preserve the "slight advantage" they had gained by their early presence and to assert themselves against the invasion of other manufacturers, including the Japanese. One of the greatest problems was that the extremely sudden "rush to the streets" in the most populous country in the world had already made all the planning in the automobile sector of the People's Republic of China obsolete. "Development in China will surprise the world yet," Goeudevert predicted at a press conference.

He said that planning difficulties also arose from the fact that "the country itself does not know how quickly development is progressing." Volkswagen had made a "correct strategic decision" early on for a presence in China, while the rest of European industry had so far "criminally" neglected the Asian-Pacific area; that is the opinion of Dr. Martin Posth, who erected VW's first Chinese plant in Shanghai and is now a member of the company's board.

He said that the share of German businesses in total investment in the Asian-Pacific area, the most important economic growth region in the world, was less than 1 percent.

With VW's total market share in the whole European market at 18 percent, "we are much too dependent on Europe," said Goeudevert, pointing to the fact that the Japanese are seeking a stronger presence in the VW domain of Europe through European plants. He said that this could only be countered by a strategy of competing with the Japanese auto industry in their own backyard with sites in China.

On Monday Goeudevert and Posth opened a China workshop, the first ever organized by the company, in the presence of the Chinese minister for the engineering and electronics industries. At the heart of the conference is discussion of the development of customer service and productive ancillary industries, as well as questions of environmental protection in automobile construction. VW wants to signal by the organization of this workshop and by a strong presence of board and management in Peking that the tempo of their involvement with China is picking up, and that VW also hopes to become more active in the areas of marketing and customer service. The workplace network should give birth to a customer service group and ultimately a selling organization, since the turn to a market economy in China will soon make the concept of dealing with cars made in China solely through state organizations obsolete.

Goeudevert and Posth fear that the enormous demand for cars will lead to an opening of the "floodgates" for imports. For it is no longer the government in Peking, but the market which dictates growth rates in the automobile market. The number of auto imports is already growing drmatically, and the Japanese auto industry, which previously hesitated to transfer technology to China in the automobile sector, is now pushing for the construction of automobile factories in China. Goeudevert says that there is room in China for other car manufacturers: "We will not have the market to ourselves any more."

The Volkswagen company has in the past left the official path open for a very long time using German precision (even in the details of the contracts for construction of plants in Shaghai and Changchun), while the Japanese competition got into China through the back door. Massive imports of Japanese models via the provinces are taking place, while VW, with thoroughness and care, has built up an ancillary industry (already numbering 220 factories) alongside its two plants. Both Japanese and German import cars are appearing more frequently on the Chinese market. Thus VW, for example, discovered that a large number of large Audi models from the U.S. had been imported, while at the same time in licensed production a bare 30,000 Audis were being assembled from components in the FAW works in Changchun.

VW would also like to strengthen its import share in China as well as its production. At the Peking workshop Werner Svetlik, likewise a member of Volkswagen's governing board, also pointed to the fact that the

"assembly sites in China" will play "a key role for Volkswagen in its worldwide association of suppliers."

"Our sites in China will not only make a great contribution to meeting the national demand for automobiles in China. It is also our strategy to integrate the Chinese assembly sites closely into the company network and to supply other Volkswagen markets from China," Svetlik said. By the year 2000 the VW factories in China should also be in a position to sell their cars in the markets in Southeast Asia which are dominated by the Japanese at present.

VW products in China must also be improved. The setting up of an automobile and ancillary industries in China, beginning from zero, has meant that the previous cars—especially the introductory model Santana, the notchback version of the old Passat—have had "experimental character." In 1994-95 VW hopes to introduce a new Santana in China. The swiftly rising consumer demands on Chinese China will force VW to come up with a wealth of ideas in the face of what is expected to be "very stiff competition" (Goeudevert).

Europe, Japan To Work on Real-World Computer

93WS0148C Paris AFP SCIENCES in French 19 Nov 92 p 22

[Unsigned article: "Japan and Europe Will Attempt to Develop a 'Four-Dimension Computer'"]

[Text] Tokyo—On 17 November, an official of the Japanese Ministry of International Trade and Industry (MITI) indicated that an organization consisting of the research institutes of nine European countries will join a Japanese project to develop a "four-dimension computer."

He pointed out that an agreement was about to be signed by MITI and the European Center for Information and Mathematics Research (ERCIM) to perfect such a computer, also called a Real World Computer/RWC, which will process large quantities of vague and complicated information by emulating the operation of the right hand portion of the brain.

If the project is implemented, it will be the first large scale research program to be conducted jointly by Japan and Europe. According to the daily YOMIURI, ERCIM has finally given its agreement after obtaining from the Japanese government assurances about access to results.

The Japanese official also indicated that Japan and the United States had already agreed to develop optical devices intended for the "four-dimension computer." He added that Japan also wanted the participation of other countries, among which he named Korea and Singapore. Once developed, the computer would be used to study the environment, safety in nuclear power plants and planes, as well as to detect cancerous lesions.

Korean Electronics Firms Invest in EC-Based Plants

93BR0189 Zellik BELGIAN BUSINESS & INDUSTRIE in Dutch Oct 92 p 22

[Article: "Koreans in Europe"]

[Text] Daewoo, Samsung, and Goldstar are pressed to strengthen their operating base for the European market. Following in the footsteps of the Japanese, Korean manufacturers of consumer electronics will have to establish local production companies. This means a break with the past as, up to now, Korean television sets and video recorders have been manufactured mainly in Korea.

Daewoo Electronics Co. is investing $150 million in France for the construction of an integrated factory for manufacturing color televisions. The televisions will be designed in France and the majority of the components will be made in Europe.

Samsung is also investing. In July this year, it decided to buy the company "Werk fur Fernsehelektronik" [television electronics plant], a former East German manufacturer of television tubes. Samsung is investing $120 million in the modernization of the factory, which allegedly has a production capacity of 1.2 million television sets per year. In addition, Samsung is negotiating the purchase of an even larger German television manufacturer, RFT. In an effort to reduce costs, Samsung has also relocated its Portuguese and Spanish television factories to Billingham in Britain and its British video recorder factory to Spain.

Goldstar is trying to increase its market share through strategic alliances. Goldstar manufactures refrigerators in Italy, in cooperation with the Italian company Iberna and the German company GEPI. The design work is performed by Goldstar's branch in Ireland. Goldstar's Italian color television factory uses television tubes manufactured by the Finnish company Nokia.

The Koreans intend to triple their share in the European market. In the next five years, they intend to invest approximately $700 million to achieve this formidable objective.

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